IN THE UNITED STATES PATENT AND TRADEMARK OFFICE In re Patent Application of:

Inventor:

OKA, et al

Group Art Unit:

1752

Application No.:

10/602,622

Conf. No.:

2391

Examiner:

Thorl Chea

Filed:

June 25, 2003

Title:

PHOTOTHERMOGRAPHIC MATERIAL

DECLARATION UNDER 37 C.F.R. \$1.132

Commissioner for Patents

(P.O. Box 1450

Alexandria, VA 22313-1450)

Sir:

- I, Seiichi Yamamoto, do declare and state as follows:
- I graduated from Tohoku University with a Master's Degree in Chemistry in March 1990;
- I joined Fuji Photo Film Co., Ltd. in April 1990, and since that time I have been engaged in research and development in the field of silver halide photosensitive materials for printing, and since March 2000, in the field of silver halide photosensitive materials for medical use

at Ashigara Laboratory (presently, Digital & Photo-Imaging Materials Research Laboratories);

I am a co-inventor of the subject matter disclosed and claimed in the above-identified application; and

I am familiar with the Office Action of June 14, 2005, and understand that the Examiner has rejected Claims 1-9 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Okada et al (US Patent No.5,952,167), Ikari (US Patent No. 6,482,583), Siga et al (US Patent No. 4,332,889) and Toya et al (US Patent No. 5,998,126) and Claims 9 and 13-20 under 35 U.S.C. S 103(a) as heing unpatentable over Tto (US Patent No. 6,376,167).

(1) The following additional comparative experiments were carried out by me or under my supervision in order to make the advantages of the subject matter clearer.

(Additional comparative experiments)

Test Samples 1 - 45 were prepared in the same manner as Sample 1 of Example 1 described in Ikari (US Patent No. 6,482,583) except that:

1) the silver halide emulsion of No. 1 of Ikari (a grain size of AgBr is 58 nm) and Nos. 1a, 1b (only the composition of the silver halide was changed from the silver halide

;0333556430

emulsion No. 1 of Ikari) were used;

- 2) the mercapto hetero-ring compounds I-2 (7.6 \times 10⁻⁴ mol/molAg) and I-5 (7.6 \times 10.4 mol/molAg) of Ikari were used; and
- 3) the hetero-ring polyhalogen compound Nos. 1, 2, 5 and 6 (1.6 $mmol/m^2$) of Okada (US Patent No. 5,952,167) were used respectively.

Samples 1-45 were processed and evaluated sensitivity, fogging and printout performance in the same manner as in Example described in Applicants' Specification.

The results obtained are listed in following Table A.

太陽VAオフィス

TABLE A

		mercap hetero-	hetero-		sensit	Fogging	Drintont	
halide		to ring	ring		ivity	SIT SSAT	rrincout	Remarks
ulsi compositi	ţį	hetero poly-	poly-		To the second		periorma	
on on ring halogen	•	- ring halogen	halogen				Allmin	
compd, compd.	-	-	compd.					
No. 1 AgBr -	1			ĺ	100			
				1		77.0	0.21	Comparative Example
No. 1 AgBr [1-2 -	1-2		,		142	0.16	81.0	
No. 1 AgBr . No 1	C.N.	, P	1	1	0	,		comparative Example
		- 1	- 1		2	0.16	0.20	Comparative Example
No. 1 AgBr I-2 No. 1	I-2 No.	No.			120	0.15	0.14	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	י	, ,		1				comparative Example
	ANO.	ANO.	- 1	- [83	0.16	0.15	Comparative Example
No. 1 AgBr I-2 No. 2	I-2 No.	No.			125	0.15	91.0	
_				1			01.0	comparative Example
No. 5	- No.	No.	- 1		88	0.16	0.15	Comparative Grand
No. 1 AgBr [-2 No. 5	I-2 No.	No.			128	J C		ביים האים האים וויים
•				1		0.1.0	0.13	Comparative Example
NO. 1 AGBr - No. 6	- No.	No.			106	0.16	0.14	The second of
l	[]	Ž	l					comparative Example
	700.	, Co.	- 1	- 1	94	0.15	0.13	Comparative Example
								3 - 3

0.17 0.16		Comparative Example	0.15 0.15 Comparative	ס זב ע	01.0	Comparative Example	0.20 0.16 Comparative Evample	, c		0.16 0.14 Comparative Example	0.14		0.13 0.14 Comparative Example	8 0.14 0.07 Present Invention	0.13		0.08 Present Invention	0.13	
138	NO 1		No. 2 105	No. 5 104	No 6	,	- 98	- 140	,	INO. 1 85	No. 1 137	No 2	٥	No. 2 138	No. 5 83	u	. 1	No. 6 85	NO 6
I-5	1-5		1-5	I-5	1-5		,	I-2			I-2			7-1	1	[-2			I-2
AgBr	AgBr		AgBr	AgBr	AgBr		AGBES0110	AgBr90110	AgBrootin		AgBr90I10	AgBr90110	4 1 4 0 0 1 M	OTTOCTORY	AgBr90I10	AgBr90I10		AgBr90110	AgBr90110
No. 1	No. 1		No. 1	No. 1	No. 1	1, 1	G. La	No. 1a	No. 1a	1	No. 1a	No. 1a	, L	.	No. 1a	No. 1a	ĺ	No. 1a	No. 1a
11 N	12 N		T3	14 N	15 N	16		17 N	18 N		19 N	20 N	21		22 N	23 N		27	25 N

No. 1a AgBr90110 1-5 - 138 0.13 0.13 Comparative Example No. 1a AgBr90110 1-5 No. 2 139 0.14 0.08 Present Invention No. 1a AgBr90110 1-5 No. 2 139 0.14 0.08 Present Invention No. 1a AgBr10110 1-5 No. 5 140 0.14 0.08 Present Invention No. 1b AgBr10190 - 95 0.17 0.12 Comparative Example No. 1b AgBr10190 -	í	a	,	\neg	<u> </u>	Ţ.			D)	v	Ψ.			o U			o)		T	w l	
1a AgBr90II0 [-5] - 138 0.13 0.13 Comparative 1a AgBr90II0 [-5] No. 1 135 0.14 0.08 Present Invented 1a AgBr90II0 [-5] No. 2 139 0.14 0.08 Present Invented 1a AgBr90II0 [-5] No. 6 137 0.14 0.08 Present Invented 1b AgBr10I90 - - 95 0.17 0.12 Comparative 1b AgBr10I90 - - 95 0.17 0.12 Comparative 1b AgBr10I90 - No. 1 141 0.14 0.06 Present Inventer 1b AgBr10I90 - No. 2 84 0.11 Comparative 1b AgBr10I90 - No. 2 84 0.13 0.11 Comparative 1b AgBr10I90 - No. 5 83 0.13 0.11 Comparative 1b		- cmex	1	10121	tion	tion	ition	200	vallip	xamp	[xamb]		tion	xamp]	•	LTON	xampl	†	70	xamp1	tion
la AgBr30II0 [-5] - 138 0.13 0.13 Compara la AgBr30II0 [-5] No. 1 135 0.14 0.08 Present la AgBr30II0 [-5] No. 2 139 0.14 0.08 Present la AgBr30II0 [-5] No. 6 137 0.14 0.08 Present la AgBr10I90 - - 95 0.17 0.08 Present lb AgBr10I90 - - 95 0.17 0.12 Compara lb AgBr10I90 - - 95 0.13 0.11 Compara lb AgBr10I90 - No. 1 141 0.14 0.06 Present lb AgBr10I90 - No. 2 84 0.13 0.11 Compara lb AgBr10I90 - No. 5 83 0.14 0.06 Present lb AgBr10I90 - <td></td> <td>ive</td> <td></td> <td>Tuver</td> <td>Inver</td> <td>Inver</td> <td>Inver</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Inver</td> <td></td> <td>4</td> <td>711061</td> <td></td> <td>Inven</td> <td></td> <td></td> <td>Inven</td>		ive		Tuver	Inver	Inver	Inver						Inver		4	711061		Inven			Inven
la AgBr90110 [-5] - 138 0.13 0.13 la AgBr90110 [-5] No. 1 135 0.14 0.08 la AgBr90110 [-5] No. 5 140 0.14 0.08 la AgBr90110 [-5] No. 6 137 0.14 0.08 lb AgBr10190 - 95 0.17 0.12 lb AgBr10190 - 95 0.17 0.12 lb AgBr10190 - 0.05 0.14 0.06 lb AgBr10190 - No. 1 141 0.14 0.06 lb AgBr10190 - No. 2 84 0.13 0.11 lb AgBr10190 - No. 2 84 0.13 0.06 lb AgBr10190 - No. 2 84 0.13 0.01 lb AgBr10190 - No. 2 84 0.13 0.01 lb		parat	1 2	. ור	sent	sent	sent	na rat	2	parat	parat		sent	parat	1		parat			parat	sent
la AgBr90110 [-5] - 138 0.13 la AgBr90110 [-5] No. 1 135 0.14 la AgBr90110 [-5] No. 2 139 0.14 la AgBr90110 [-5] No. 5 140 0.14 lb AgBr10190 - - 95 0.17 lb AgBr10190 - - 95 0.13 lb AgBr10190 - - 95 0.14 lb AgBr10190 - No. 1 141 0.14 lb AgBr10190 - No. 2 84 0.13 lb AgBr10190 - No. 2 140 0.14 lb AgBr10190 - No. 5 83 0.14 lb AgBr10190 - No. 5 139 0.14 lb AgBr10190 - No. 6 65 0.13 lb AgBr10190 - No.		Con	200		Fre	Pre	Pre	Ü	,	5	CO		rre 	Con	<u>ر</u> م		5	Pre		Com	Pre
la AgBr90II0 [-5] - 138 0.13 la AgBr90II0 [-5] No. 1 135 0.14 la AgBr90II0 [-5] No. 2 139 0.14 la AgBr90II0 [-5] No. 5 140 0.14 lb AgBr10I90 - - 95 0.17 lb AgBr10I90 - - 95 0.13 lb AgBr10I90 - - 95 0.14 lb AgBr10I90 - No. 1 141 0.14 lb AgBr10I90 - No. 2 84 0.13 lb AgBr10I90 - No. 2 84 0.13 lb AgBr10I90 - No. 5 83 0.14 lb AgBr10I90 - No. 5 139 0.14 lb AgBr10I90 - No. 6 85 0.13 lb AgBr10I90 - No. 6		3	C C		0 4	∞	80	2		4	н	9		-	y			7	.	_	7
la AgBr90II0 I-5 - 138 la AgBr90II0 I-5 No. 1 135 la AgBr90II0 I-5 No. 5 140 la AgBr90II0 I-5 No. 6 137 lb AgBr10I90 - - 95 lb AgBr10I90 - No. 2 84 lb AgBr10I90 - No. 2 84 lb AgBr10I90 - No. 5 83 lb AgBr10I90 - No. 5 139 lb AgBr10I90 - No. 6 65 lb AgBr10I90 - No. 6 138	-	0.1	0			2		0.1	-		0.1	· ·	?	0.1	0.0	,		0.0	-		0.0
la AgBr90II0 I-5 - 138 la AgBr90II0 I-5 No. 1 135 la AgBr90II0 I-5 No. 5 140 la AgBr90II0 I-5 No. 6 137 lb AgBr10I90 - - 95 lb AgBr10I90 - No. 2 84 lb AgBr10I90 - No. 2 84 lb AgBr10I90 - No. 5 83 lb AgBr10I90 - No. 5 139 lb AgBr10I90 - No. 6 65 lb AgBr10I90 - No. 6 138		13	14	14	;		14	17	7	:	13	4		13	14		2	14	2	2	[5
la AgBr90II0 I-5 - la AgBr90II0 I-5 No. 1 la AgBr90II0 I-5 No. 5 la AgBr90II0 I-5 No. 6 lb AgBr10I90 - - lb AgBr10I90 - No. 1 lb AgBr10I90 - No. 2 lb AgBr10I90 - No. 5 lb AgBr10I90 - No. 5 lb AgBr10I90 - No. 5 lb AgBr10I90 - No. 6	ŀ	0	0	0		> -	=	0	°	-	• 1	Ċ			0		: - -	0	c	; 	5
la AgBr90II0 I-5 - la AgBr90II0 I-5 No. 1 la AgBr90II0 I-5 No. 5 la AgBr90II0 I-5 No. 6 lb AgBr10I90 - - lb AgBr10I90 - No. 1 lb AgBr10I90 - No. 2 lb AgBr10I90 - No. 5 lb AgBr10I90 - No. 5 lb AgBr10I90 - No. 5 lb AgBr10I90 - No. 6		138	135	139	107			35	141		32	141		34	140	2	,	.39	រប		.38
1a AgBr90110 [-5] - 1a AgBr90110 [-5] No. 1a AgBr90110 [-5] No. 1a AgBr90110 [-5] No. 1b AgBr10190 - - 1b AgBr10190 - No.							-												~~	-	
la AgBr90II0 [-5 la AgBr90II0 [-5 la AgBr90II0 [-5 la AgBr90II0 [-5 la AgBr10I90 - lb AgBr10I90 -				1	1	1	- 1		ı	1			1	- 1			1	- 1		1	- 1
1a AgBr90110 1a AgBr90110 1a AgBr90110 1a AgBr90110 1b AgBr10190																					
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-					_	+	,		 					-	1	.	1-2	1		7-1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		90I10	90110	90I10	90110	90II0		10190	10190	00101	10130	06101	0.70		10190	10I90			06I01	40	0670
		AgBr	AgBr	AgBr	AgBr	AqBr		AgBr	AgBr	AGR	1300	AgBr	Ager		AgBr	AgBr]	2	Aybr.	AgBr	7000	10 80
NO	1	- 1	1a	1a	la	1a		115	1b	1.5	3	13	1b		<u>a</u>	1b	, ,	3	1.6	7	3
		Š	ğ.	No.	No.	No.	;	No.	No.	No.		્રે	Ño.	;	ġ	No.	Ž		No.	NO	
26 27 28 27 27 28 33 34 33 34 35 36 37 37 38 39 39 40 40		۾ ا	7:	80	9	o.		-1	73	n		4	വ		٥	7	œ		0	0	

		Τ		Τ		T		1	_
	Comparative Example		Present Invention		Present Invention		Present Invention		Present Invention
,	0.11	•	90.0		0.05		0.06		0.0
13	7. T	· ·	0 · T.3		7. T	7	V - 14	-	# 1
140		141		142	727	142	7.5	142	
ı		No. 1		No. 2	- 1	No. 5		No. 6 142	
I-5		I90 I-5		I90 I-5		I-5			
No. 1b AgBri0190 I-5		AgBr10190		AgBr10190		No. 1b AgBri0190 I-5		No. 1b AgBr10190 [-5	
No. 1b		No. 1b AgBridi		No. 1b AgBr103		No. 1b		No. 1b	
41		42		43		44		45	

Sensitivity is shown as a relative value taking the sensitivity of Sample No. 1 to be 100.

As seen in Table A above, the combination of the silver halide emulsion, the mercapto hetero-ring compound and the hetero-ring polyhalogen compound of the present invention were unexpectedly superior in fogging and printout performance ($\Delta Dmin$) in comparison to the comparative examples, while maintaining high sensitivity.

In the combinations of mercapto hetero-ring compound and hetero-ring polyhalogen compound in the comparative examples. ADmin decreases by only 0.01-0.02, and ADmin is higher than 0.1. In the combination in the examples of the present invention, ADmin decreases by 0.04-0.06, and ADmin is lower than 0.1.

(2) Regarding the DECLARATION UNDER 37 C.F.R. §1.132 submitted at January 19, 2005, I further declare that the amounts of the first metal and the second metal used in Experiment B are 5×10^{-4} mol/molAg and 3×10^{-3} mol/molAg, respectively.

I interpret the effect of Dmin, sensitivity and printout of the present invention.

Sensitivity is needed to be 90 % or more of the standard sensitivity, since it relates to process speed.

Dmin is preferred to be 0.20 or less on account of image diagnosis.

In printout, the difference of the film density between an initial time of storage and at the end of storage, $\Delta D min$, of 0.1 or more makes observation difficult, when images are used for medical applications.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

DATE:

September 13, 2005

Seiichi Yamamoto

Seiichi Yamamoto